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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/868,237	06/15/2001	Wolfgang Zirwas	112740-229	7074
29177	7590	11/03/2004	EXAMINER	
BELL, BOYD & LLOYD, LLC P. O. BOX 1135 CHICAGO, IL 60690-1135			TORRES, JUAN A	
			ART UNIT	PAPER NUMBER
			2631	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/868,237

Applicant(s)

ZIRWAS, WOLFGANG

Examiner

Juan A. Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 23-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-29,32,35-37 and 39-44 is/are rejected.
- 7) ☒ Claim(s) 30,31,33,34 and 38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10142004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, all the features claimed must be shown, such as transfer function of the channel; pilot signal; storing; average computation; OFDM/DMT; evaluator; adaptor; threshold SNR; amplitude and phase transfer functions; and sending characteristics from first unit to second unit and from second unit to first unit, or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement

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Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 23-25, 32, 36, 39 and 42-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Wu (US 6389062).

As per claim 23 and 42 Wu (US 6389062) discloses a method for transmitting information via a transmission medium having particular transmission characteristics, with the aid of a multicarrier method, from a first unit to a second unit, the method comprising the steps of using a first transmit signal to transmit the information, the first transmit signal exhibiting a plurality of frequency-specific subcarriers (figure 9 column 17 line 29-31); determining, in the first unit (modem 10), frequency-selective transmission characteristics of the transmission medium (signal-to-noise ratio SNR) using a second transmission signal sent out by the second unit (modem 20<sub>k</sub>), the second transmission signal exhibiting at least one frequency-specific subcarrier (column

17 line 33-35); and adapting (bit loading determined), in the first unit, the plurality of frequency-specific subcarriers of the first transmit signal to the frequency-selective transmission characteristics of the transmission medium which have been determined (column 17 line 63-64).

As per claim 24 and 43 Wu (US 6389062) discloses a method for determining, in the second unit, the frequency-selective transmission characteristics of the transmission medium (column 17 line 33-35); adapting, in the second unit, to the frequency-selective transmission characteristics of the transmission medium which have been determined, a plurality of frequency-specific subcarriers of the second transmit signal formed with the aid of a multicarrier method and transmitted from the second unit to the first unit (column 17 line 63-64).

As per claim 25 and 44 Wu (US 6389062) discloses the use of frequency-selective amplitude-specific transmission characteristics and frequency-selective phase-specific transmission characteristics of the transmission medium (column 3 line 32-33).

As per claim 32 Wu (US 6389062) discloses transmitting the determined frequency-selective transmission characteristics from the first unit to the second unit (column 17 line 59-61); and adapting the frequency-specific subcarriers of the second transmit signal to the transmission characteristics of the transmission medium in the second unit (column 17 line 61-64).

As per claim 36 Wu (US 6389062) discloses a method for determining, in the determination of the frequency-selective transmission characteristics, a signal power/noise power ratio for each subcarrier of each of the first and second transmit

signals (column 17 line 33-35); and utilizing the respective subcarrier of each of the first and second transmit signals for the transmission of information depending on the respective signal power/noise power ratio determined in each case (column 17 line 48-50).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26, 27 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (US 6389062) as applied to claim 25 above, and further in view of Kao (US 6075821).

As per claim 26 Wu (US 6389062) teaches claim 25. Wu (US 6389062) doesn't specifically disclose determining a transfer function of the transmission medium during the step of determining the frequency-selective transmission characteristics of the transmission medium. It is well known and Kao (US 6075821) discloses a transfer function of the transmission medium during the step of determining the frequency-selective transmission characteristics of the transmission medium (column 3 line 56). The transfer function disclosed by Kao (US 6075821) can be use in the channel characteristics medium disclosed by Wu (US 6389062). It would have been obvious to one having ordinary skill in the art at the time the invention was made to increase the bit rate of the system to determine a transfer function of the transmission medium an use it

to control the quality of the signal in the way disclosed by Kao (US 6075821) in the system disclosed by Wu (US 6389062).

As per claim 27 Wu (US 6389062) and Kao (US 6075821) teach claim 26. Kao (US 6075821) also teaches representing the frequency-selective amplitude-specific transmission characteristics of the transmission medium by an absolute value of the transfer function which has been determined (Equation 1 column 3 line 53 and equation 2 column 12 line 40).

As per claim 37 Wu (US 6389062) teaches claim 36. Wu (US 6389062) doesn't specifically teach that when the signal power/noise power ratio measured below a limit value, the corresponding subcarrier is not utilized for transmitting information. Kao (US 6075821) teaches that when a signal power/noise power ratio measured below a limit value, the corresponding subcarrier is not utilized for transmitting information (column 13 line 6-8). The method disclosed by Kao (US 6075821) for bit loading can be used in the system disclosed by Wu (US 6389062). It would have been obvious to one having ordinary skill in the art at the time the invention was made to maximize the data rate of the system to use the bit loading algorithm disclosed by Kao (US 6075821) in the system disclosed by Wu (US 6389062).

Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (US 6389062) as applied to claim 23 above, and further in view of Aslanis (US 5627863).

As per claim 28 Wu (US 6389062) teaches claim 23. Wu (US 6389062) teaches determining the frequency-selective transmission characteristics using both the first and

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second transmit signals (column 17 32-34). Wu (US 6389062) doesn't teach utilizing at least one subcarrier of one of the first and second transmit signals for transmitting at least one pilot signal. Aslanis (US 5627863) teaches utilizing at least one subcarrier of one of the first and second transmit signals for transmitting at least one pilot signal (column 4 line 61 and column 12 line 10). The pilot tone disclosed by Aslanis (US 5627863) can be used in the system disclosed by Wu (US 6389062). It would have been obvious to one having ordinary skill in the art at the time the invention was made to synchronize the receivers to use the pilot tones algorithm disclosed by Aslanis (US 5627863) in the system disclosed by Wu (US 6389062).

As per claim 29 Wu (US 6389062) and Aslanis (US 5627863) teach claim 28. Aslanis (US 5627863) also teaches that modulating the at least one subcarrier using a phase modulation method for transmitting the at least one pilot signal, wherein the pilot signal exhibits a particular reference amplitude (column 6 lines 3 and 11).

Claim 35 rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (US 6389062). Wu (US 6389062) teaches claim 23. Wu (US 6389062) doesn't specifically teach that the first and second transmit signals transmitted between the first and second units are transmitted in a time division duplex transmission method. Wu (US 6389062) doesn't specifically teach that the first and second transmit signals transmitted between the first and second units are transmitted at the same time either. It would have been obvious to one having ordinary skill in the art at the time the invention was made to avoid interference between the upstream and downstream channel analysis that the first



and second transmit signals transmitted between the first and second units be transmitted in a time division duplex transmission method.

Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (US 6389062) as applied to claim 23 above, and further in view of Marchok (US 5790514). Wu (US 6389062) teaches claim 23. Wu (US 6389062) doesn't specifically teach a multicarrier method implemented by one of an orthogonal frequency division multiplex transmission method and a transmission method based on discrete multitone. Marchok (US 5790514) discloses a multicarrier method implemented by one of an orthogonal frequency division multiplex transmission method and a transmission method based on discrete multitone (column 3 line 60). The channel analysis method disclosed by Wu (US 6389062) can be used in the modulation system disclosed by Marchok (US 5790514). It would have been obvious to one having ordinary skill in the art at the time the invention was made to minimize the number of modems to use only one modem in the Central Office to use the multicarrier method implemented by one of an orthogonal frequency division multiplex transmission method and a transmission method based on discrete multitone disclosed by Marchok (US 5790514) in the system disclosed by Wu (US 6389062).

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (US 6389062) as applied to claim 23 above, and further in view of Dobson (US 6603811). Wu (US 6389062) teaches claim 23. Wu (US 6389062) teaches a transmission medium of a line-connected transmission channel. Wu (US 6389062) doesn't specifically teach a transmission medium of a wireless radio channel. Dobson (US 6603811) discloses a

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transmission medium of a wireless radio channel (column 3 line 6). The channel analysis method disclosed by Wu (US 6389062) can be use in the wireless system disclosed by Dobson (US 6603811). It would have been obvious to one having ordinary skill in the art at the time the invention was made to communicate between points that are not connected by a wired medium to use a wireless medium as disclosed by Dobson (US 6603811) in the system disclosed by Wu (US 6389062).

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (US 6389062) as applied to claim 23 above, and further in view of Hershey (US 5844949). Wu (US 6389062) teaches claim 23. Wu (US 6389062) teach a transmission medium of a power supply line transmission channel. Wu (US 6389062) doesn't specifically teach a transmission medium of a power supply line. Hershey (US 5844949) discloses the use of power lines for data transmission (column 6 lines 2-5). The channel analysis method disclosed by Wu (US 6389062) can be use in the power supply line Hershey (US 5844949). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a wired medium that connect homes with centralized points to use power lines for data transmission using time-to frequency converters as indicated by Hershey (US 5844949) in the system disclosed by Wu (US 6389062).

***Allowable Subject Matter***

Claims 30, 31, 33, 34 and 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*M. Gh*  
MOHAMMED GHAYOUR  
SUPERVISORY PATENT EXAMINER

JAT

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10/18/2004